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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/695,620	10/27/2003	Alexander Kadyshevitch	PDC/6967.PO2	3908

7590 04/13/2007

PATENT COUNSEL
APPLIED MATERIALS, INC.
Legal Affairs Department
P.O. BOX 450A
Santa Clara, CA 95052

EXAMINER	
VANORE, DAVID A	
ART UNIT	PAPER NUMBER
2881	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	04/13/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/695,620	KADYSHEVITCH ET AL.	
	Examiner	Art Unit	
	David A. Vanore	2881	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,4-18 and 21-34* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,4-18 and 21-34* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 October 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed February 26, 2007 have been fully considered but they are not persuasive.

2. Applicant argues that Yamada et al. fails to teach the classification of anomalies. The examiner disagrees, especially with respect to the teaching at Col. 20 of Yamada et al. Yamada et al. shows that analysis of a classified contact hole and the characteristics thereof, the cause can be identified and corrected. Yamada et al. specifically cites the detection of failure of a processing machine at Col. 20.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

5. Claims 1-2, 4-18, and 21-34 are rejected under 35 U.S.C. 102(e) as being clearly anticipated by Yamada et al. (USPN 6,768,324).

6. Regarding claims 1 and 18, Yamada et al. teaches a device and method for testing a sample comprising directing a beam of charged particles from a source

(Producing beam 61 for example) towards a sample having at least partially conductive first and second layers and contact openings therein (Fig. 16a, Items 41 and 42), the particle beam being along an axis which deviates substantially in angle from a normal to a surface of the sample (Fig. 16A), irradiating one or more contact opening Item 43), a current measuring device for measuring current flowing through a specimen (Item 9), a secondary electron detector to measure secondary electrons (Item 33), a controller which creates a map of the sample from the specimen current flowing through the sample and secondary electrons detected (Item 10 and Fig. 55 for creating a 3D mapped image of the scanned sample), a network which necessarily includes a workstation such that when analysis of a sample is completed a determination of the cause of defect is made and an instruction for regulating an etching apparatus is sent to a manufacturing device (Col. 19). Further, Yamada et al. shows that such analysis includes assessment of the contact holes and wafers which are classified to determine defects, or anomalies such that corrective action may be carried out to correct a processing device. (Note Col. 20).

7. Regarding claim 2, the map created utilizes the compensation current indicating the contour information determined by analyzing current flowing through the sample and displaying said information with the data indicated the openings or surface of the sample where the surface information is determined by secondary electron detection (Col. 20 under the heading "Map Display")

8. Regarding claims 4 and 21, the map and analysis indicate at least a width, or diameter, of a contact opening (Col. 20 under the heading Quality Determination by Map Display and Process Evaluation).

9. Regarding claims 5-8 and 22-25, the map and the analysis of said map indicate variations of at least contact hole size (Col. 19 Lines 9-12) where such determination is made by comparison between first and second samples (Col. 19 Lines 25-40) such that corrective action such as regulation of an etching apparatus is made in response to analysis of said map (Col. 19 Lines 45-48).

10. Regarding claims 9 and 26, since the map indicates the diameter distribution of contact holes (Col. 21 Lines 25-28), including the compensation current which indicates the size and location of a contact hole bottom and including the opening portion of a contact hole, which lies on the surface of the sample, the map and the analysis thereof indicates an alignment between contact openings in a second layer and a structure in a second layer such as that illustrated in Fig. 59A-B and Fig. 60A-B, where Item 242 is an exemplary second structure in the first layer.

11. Regarding claims 10 and 27, the sample is a semiconductor wafer.

12. Regarding claims 11-12 and 28-29, the process and device of Yamada et al. tests the entire wafer including all locations thereon and is capable of scanning different portions or test regions (Col. 44 Lines 1-9).

13. Regarding claims 13-14 and 30-31, the contact openings comprise holes or grooves (trenches), note Col. 42 Lines 50-61.

14. Regarding claims 15 and 32, the beam may be angled such that more beam strikes a side wall than a bottom of a contact opening (Fig. 54).

15. Regarding claims 16 and 33, the analysis and controller performing such analysis may assess the presence of a residue (Fig. 19A-B), note Item 71.

16. Regarding claims 17 and 34, Yamada et al. teaches that the substrate is irradiated at a first lower energy beam, and then subsequently at higher energy to allow the electron beam to penetrate an insulating layer, thereby precharging the substrate negatively and allowing compensation current to be measured. Note Col. 40.

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to David A. Vanore whose telephone number is (571) 272-2483. The examiner can normally be reached on M-F 7:30-5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571) 272-2293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

David A Vanore
Primary Examiner
Art Unit 2881

dav